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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WOO, ISAAC M	

ART UNIT	PAPER NUMBER
2166	

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/977,038	BROWN ET AL.	
	Examiner	Art Unit	
	Isaac M. Woo	2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40 and 43-46* is/are pending in the application.

4a) Of the above claim(s) *22-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21, 40 and 43-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to Applicant's Election in response to the Election/Restriction Requirement set forth in the September 10, 2004, filed on October 12, 2004.

2. Applicant elected Group I, claims 1-21, and 46, with traverse. Applicant argues that Group I and Group V are same group and need to be examined together. The arguments are persuasive. Group I (claims 1-21 and 46) and Group V (claims 40 and 43-45) are presented for examination for this office action.

3. Claims 41-42 are canceled. Claims 22-39 are withdrawn from consideration as being drawn on the non-elected inventions. Claims 1-40 and 43-46 are pending.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claim 7 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As set forth in MPEP 2106 (II) (A):

A. Identify and Understand Any Practical Application Asserted for the Invention

The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600,1603-06 (Fed. Cir. 1993)). Accordingly, a complete disclosure should contain some indication of the practical application for the claimed invention, i.e., why the applicant believes the claimed invention is useful.

Apart from the utility requirement of 35 U.S.C. 101, usefulness under the patent eligibility standard requires significant functionality to be present to satisfy the useful result aspect of the practical application requirement. See Arrhythmia, 958 F.2d at 1057, 22 USPQ2d at 1036. Merely claiming nonfunctional descriptive material stored in a computer-readable medium does not make the invention eligible for patenting. For example, a claim directed to a word processing file stored on a disk may satisfy the utility requirement of 35 U.S.C. 101 since the information stored may have some "real world" value. However, the mere fact that the claim may satisfy the utility requirement of 35 U.S.C. 101 does not mean that a useful result is achieved under the practical application requirement. The claimed invention as a whole must produce a "useful, concrete and tangible" result to have a practical application.

Regarding claim 7, " A test system" includes *no physical structure of the machine in terms of its hardware or hardware and software combination.* Because the limitation of claim 7, "emulation module", "first module" and "second module" are computer program product or software system that are not embedded any a computer-readable medium and run by any a computer or machine. Therefore, the claims are not a statutory system and should be rejected under 35 U.S. C. § 101 as not being tangible.

Claim Objections

5. Claim 1 is objected to under 37 CFR 1.75(c), as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim language in the following claim is not clearly understood:

As per claim 1, lines 2-3, it is not clearly understood what is meant by "environment information of a database system separate from the test system". What is test system and what is the meaning of *separate from the test system* in data management system. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 1-21, 40 and 43-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Agrawal et al (U.S. Patent No. 6,366,903, hereinafter, "Agrawal").

With respect to claim 1, Agrawal discloses, emulation module (240, optimizing, fig. 2, col. 7, lines 47-67 to col. 8, lines 1-31) to receive environment information of a database system, the emulation module to emulate an environment of the database system based on the environment information, see (col. 2, lines 49-62, database comprises information, and optimizers is database components that generate optimizing

plan for each query, 240, optimizing, fig. 2, col. 7, lines 47-67 to col. 8, lines 1-31); first module executable in the emulated environment (optimizing, fig. 2, col. 7, lines 47-67 to col. 8, lines 1-31) and adapted to receive a set of queries (workload, col. 2, lines 38-49, col. 6, lines 57-67 to col. 7, lines 1-20) and to provide a set of candidate indexes for the set of queries (230, select candidate indexes for workload, fig. 2, col. 7, lines 21-47), the first module adapted to eliminate (col. 10, lines 31-67 to col. 11, lines 1-3) one or more candidate indexes based on one or more predetermined criteria (240, 250, fig. 2, col. 7, lines 47-67 to col. 8, lines 1-61, candidate indexes are reviewed); and second module executable in the emulated environment and adapted to generate a recommended index from the set of candidate indexes, see (260, final recommended indexes are generated, fig. 2, col. 4, lines 42-52, col. 15, lines 36-59).

With respect to claim 2, Agrawal discloses, set of queries comprises a set of SQL statements, see (col. 7, lines 18-21).

With respect to claims 3, Agrawal discloses, generate at least another recommended index from the set of candidate indexes, see (260, final recommended indexes are generated, fig. 2, col. 4, lines 42-52, col. 15, lines 36-59).

With respect to claims 4, Agrawal discloses, optimizer tat is adapted to user statistics, see (240, fig. 2, col. 14, lines 40-54).

With respect to claim 5, Agrawal discloses, statistics are based on a scan of a sample of one or more tables, the sample less than all the rows of the one or more tables, see (fig. 2, col. 14, lines 40-54).

With respect to claim 6, Agrawal discloses, user interface to receive an indication of a user-specified size of the sample, see (fig. 2, col. 14, lines 40-54).

With respect to claim 7, Agrawal discloses, first module adapted to receive a set of queries (workload, col. 2, lines 38-49, col. 6, lines 57-67 to col. 7, lines 1-20) and to provide a set of candidate indexes for the set of queries (230, select candidate indexes for workload, fig. 2, col. 7, lines 21-47), first module adapted to eliminate one or more candidate indexes based on one or more predetermined criteria, (240, 250, fig. 2, col. 7, lines 47-67 to col. 8, lines 1-61, candidate indexes are reviewed); optimizer adapted to generate a recommended index from the set of candidate indexes (260, final recommended indexes are generated, fig. 2, col. 4, lines 42-52, col. 15, lines 36-59), wherein the one or more predetermined criteria comprises a threshold change rate (col. 10, lines 34-67, col. 15, lines 15-58), first module adapted to eliminate one or more candidate indexes having a change rate exceeding the threshold change rate (col. 10, lines 34-67, col. 15, lines 15-58).

With respect to claim 8, Agrawal discloses, eliminate a candidate index that is a subset of another candidate index, see (col. 10, lines 34-67, col. 15, lines 15-58).

With respect to claim 9, Agrawal discloses, analysis module adapted to cooperate with the optimizer to generate the recommended index, see (260, final recommended indexes are generated, fig. 2, col. 4, lines 42-52, col. 15, lines 36-59).

With respect to claim 10, Agrawal discloses, set of candidate indexes by identifying the candidate indexes from the set of queries and defining the set of queries in a database, see (workload, col. 2, lines 38-49, col. 6, lines 57-67 to col. 7, lines 1-20).

With respect to claims 11-12, Agrawal discloses, access the database to retrieve and validate the candidate indexes, see (col. 10, lines 34-67, col. 15, lines 15-58).

With respect to claim 13, Agrawal discloses, user interface to receive user-specified one or more indexes, the optimizer adapted to generate a cost associated with a query plan based on the user-specified one or more indexes, see (col. 10, lines 34-67, col. 15, lines 15-58).

With respect to claim 14, Agrawal discloses, collect statistics based on a sample of rows of one or more tables, a size of the sample based on the user-specified percentage value, see (col. 14, lines 16-54).

With respect to claims 15-16, Agrawal discloses, hint based on a sample of rows of one or more tables, a size of the sample based on the user-specified percentage value, see (col. 14, lines 16-54).

With respect to claim 17, Agrawal discloses, analysis module adapted to apply a predetermined algorithm, the analysis module adapted to cooperate with the optimizer to generate the recommended index using the predetermined algorithm, see (col. 14, lines 16-54).

With respect to claim 18, Agrawal discloses, analysis module is adapted to submit candidate indexes to the optimizer, the optimizer adapted to determine the cost of one or more of the queries based on the candidate indexes, see (col. 7, lines 48-67 to col. 8, lines 1-30).

With respect to claim 19, Agrawal discloses, optimizer is adapted to select the candidate index associated with a lowest cost as the recommended index, see (col. 7, lines 48-67 to col. 8, lines 1-30).

With respect to claim 20, Agrawal discloses, workload captured from the database system, and wherein the database system is a parallel system having plural access modules, the environment information containing information regarding the

parallel system and plural access modules, see (col. 2, lines 38-49, col. 6, lines 57-67 to col. 7, lines 1-20).

With respect to claim 21, Agrawal discloses, optimizer is adapted to compute costs for the candidate indexes in the emulated environment of the database system, see (col. 8, lines 10-30).

With respect to claim 40, Agrawal discloses, receive a set of queries, see (workload, col. 2, lines 38-49, col. 6, lines 57-67 to col. 7, lines 1-20); generate a set of candidate indexes from the set of queries, see (230, select candidate indexes for workload, fig. 2, col. 7, lines 21-47); eliminate candidate indexes based on one or more predetermined criteria, see, (240, 250, fig. 2, col. 7, lines 47-67 to col. 8, lines 1-61, candidate indexes are reviewed); invoke an optimizer to perform cost analysis of the candidate indexes, see (col. 8, lines 10-30); and use the cost analysis to select a recommended index for a database system, (col. 8, lines 10-30); wherein eliminating candidate indexes based on one or more predetermined criteria comprises at least one of: eliminating candidate indexes that are changed with updates at a rate greater than a predetermined change rate threshold, see (col. 10, lines 34-67, col. 15, lines 15-58); and eliminating a candidate index that is a subset of another candidate index, see (col. 10, lines 34-67, col. 15, lines 15-58).

With respect to claim 43, Agrawal discloses, genetic algorithm to select the recommended index, see (col. 8, lines 10-30).

With respect to claim 44, Agrawal discloses, import environment information regarding the database system; emulate an environment of the database system based on the imported environment information, wherein the generating, eliminating, invoking, and using acts are performed in the emulated environment, see (col. 10, lines 34-67, col. 15, lines 15-58).

With respect to claims 45-46, Agrawal discloses, cost-related information, statistics, and random samples from the database system, see (fig. 2, col. 7, lines 47-67 to col. 8, lines 1-61).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isaac M. Woo whose telephone number is (571) 272-4043. The examiner can normally be reached on 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T. Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

IMW
November 28, 2005

JEAN M. CORRIELUS
PRIMARY EXAMINER